

JUNIOR HIGH  
AGRICULTURE/LAND AND LIFE PROGRAM  
CURRICULUM GUIDE

1987

FIELD TEST DRAFT

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## **FIELD TEST DRAFT**

# **JUNIOR HIGH AGRICULTURE/LAND AND LIFE PROGRAM CURRICULUM GUIDE**

**Note: the resources listed in this guide have not been authorized and have been listed for evaluation purposes only.**

**Where possible suggested sources for these materials have been identified.**



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## PREFACE

As a field test curriculum guide, the program outlined within this document is in draft form.

The document is made available to teachers, administrators, curriculum specialists and others primarily for review and evaluation purposes. Where approval has been obtained at the local board level, this guide may serve as the basis for planning and teaching a junior high agriculture program. Such approval will apply to the 1987-1988 school year. A revised program is expected to be available for use in the fall of 1988.

Teachers, administrators and curriculum specialists who are forwarded copies of this guide will be asked to participate in the review process. A questionnaire will be provided for recording reactions and observations, and regional meetings may be convened to provide opportunity for oral feedback.

Any questions, comments and reactions regarding this guide should be brought to the attention of:

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## **PROGRAM RATIONALE**

The junior high Agriculture/Land and Life program is designed to provide students a broad awareness of the economic, social and scientific realities of the agricultural enterprise. It provides students an opportunity to explore personal interests as well as to broaden their understandings of the world in which they live.

The program is designed to be of interest to all students in the province, whether they be of urban or rural backgrounds. Examples and emphasis within the program provide for a balance of perspectives, including those of the consumer and the city gardener as well as the worker in agricultural businesses. The emphasis of the program is thus on awareness, insights and understanding of agriculture rather than on specific vocational knowledge and skills.

## **PROGRAM GOALS**

**Students will:**

1. Develop an awareness of the diversity of agricultural activity in their local area, in Alberta, and in the international community.
2. Develop critical thinking and problem solving skills in the process of examining agricultural problems and practises.
3. Acquire knowledge of the factors of agricultural production and processing.
4. Recognize relationships between producers, processors, marketers and consumers.
5. Appreciate agriculture for its economic significance, career opportunities and its impact on quality of life.
6. Acquire knowledge and develop skills applicable to plant and animal care in both urban and rural settings.
7. Develop a resource management perspective, recognizing areas where personal and public decision making are needed.
8. Acquire an awareness of agricultural technologies, including examination of emerging technologies as well as those of the past and present.
9. Develop an awareness of societal issues and concerns that are agriculture related.
10. Develop an awareness of the scope of agriculture in urban areas.

## **PROGRAM ORGANIZATION**

The organization of the Agriculture/Land and Life program reflects the need to provide students a broad view of agriculture as well as provide opportunities for pursuing local needs and interests.

Specific guidelines for program organization are as follows:

### **1. Year One, Year Two, Year Three Format**

The program content is organized in a way that provides for topics and themes to be developed over a three year program sequence. Entry points to the program may be at any of the three levels, but where possible it is recommended that students enter the sequence at the year one level.

For students entering the program at the year two or three level, it is recommended that the unit What is Agriculture: An Overview be included as part of their first year in the program.

### **2. Key Themes**

In each year of the program, three theme based units are to be included. The three required themes are:

- Production, Processing and Marketing
- Agricultural Technology and Research
- Resource Management

Flexibility is provided in the selection of particular topics to develop the themes. To provide guidance in selecting and organizing content, an example has been developed for each theme at each level.

Instructional requirements for theme based units are defined by the learning objectives, which are listed in the form of concepts, skill and attitude statements. These objectives are mandatory whereas the selection of specific content to achieve the objectives is a matter of school and student choice.

### **3. Options**

The balance of the program is based on optional units which may be selected from the list provided. At each level of the program a student may also study an additional local interest topic that has not been identified on this list.

### **4. Planning the Year's Program**

Four to seven units will normally constitute a year's work. Each unit will normally represent 10 to 15 hours of student activity. A total of 75 instructional hours is recommended for each level of the program, but exact times may be adapted to suit the overall instructional plan of the individual school.

### **5. Case Study Approach**

Within the required themes, the approach to topic development is generally through a case study. Using this approach, students have the opportunity to learn important ideas and principles through a focus on a meaningful example.

**FIELD TEST DRAFT PROGRAM SCOPE AND SEQUENCE**

| THEME  | YEAR 1  | YEAR 2  | YEAR 3  |
|--|---|---|---|
| <b>Theme 1<br/>Production, Processing, and Marketing</b> | <p><b>Case Study of Production, Processing and Marketing</b><br/>Emphasis on consumer perspective<br/>Example topic: Milk products</p> <p><b>What is Agriculture: An Overview</b><br/>Optional Unit *</p> | <p><b>Case Study of Production, Processing and Marketing</b><br/>Emphasis on nutrition<br/>Example topic: Meat Products</p> | <p><b>Case Study of Production, Processing and Marketing</b><br/>Emphasis on energy<br/>Example topic: Field Crops:<br/>Food and Forage</p> |
| <b>Theme 2<br/>Technology and Research</b>               | <p><b>Mechanical Technology Case Study</b><br/>Example topic: Grain Technology</p>  | <p><b>Technology for Planning, Monitoring and Managing Case Study</b><br/>Example topic: Green house Management</p>         | <p>Optional Unit *</p>  |
| <b>Theme 3<br/>Resource Management</b>                   | <p>Optional Unit *</p>  | <p><b>Water</b><br/><b>Soil</b></p>   | <p><b>Land Use</b></p>  |
|  |   |   | <p>Optional Unit *</p> <p>* See list of recommended optional topics on following page.</p>  |

## RECOMMENDED OPTIONAL TOPICS

|   |   |
|---|---|
| Agriculture and Human History   | Indoor Gardening                                    |
| Agricultural Horizons: An Examination of Agriculture Around the World | Irrigation  |
| Agricultural Services   | Landscape and Trees                                 |
| Animal Care   | Marketing and Advertising                           |
| Bee Keeping   | Market Gardening                                    |
| Cattle  | Marketing Systems                                   |
| Computers and Agriculture   | Mushroom Farming                                    |
| Crop Protection   | Oilseed (Canola)                                    |
| Farming and Wildlife  | Planning and Finances: the Business Side of Farming |
| Forage Crop Production  | Poultry   |
| Fruit Crops   | Processing and Preserving                           |
| Fur Farming   | Research and Technologies                           |
| Hogs  | Sheep and Goats                                     |
| Home Gardening and Food Production                                    | Sugar   |
| Import and Exports  | Transportation                                      |
| Horses  | Trapping  |
|   | Tree Farming  |
|   | Weather and Crop Management                         |

# **YEAR ONE PROGRAM**

# What is Agriculture?: An Overview of the Agriculture Industry

## Overview

This unit is a required unit within the year one program only. The intent of this unit is to provide a comprehensive overview of agricultural activity, providing students a sense of its diversity and scope. The perspective adopted within this unit is that agricultural activity involves much more than the rural farm and that the impact of agriculture pervades all of society. The unit examines agriculture at a variety of levels from local to global and introduces students to Alberta's role as both an importer and an exporter of agricultural commodities.

The unit is recommended to follow the Theme 1 unit; many of the key ideas and skills can be drawn out of learnings from this case study.

## Objectives

### Concepts

- diversity of agricultural operations
- components of agricultural industries: production, processing and marketing
- roles and careers
- agriculture as both producer and consumer of services
- historical trends:
  - increasing productivity per farmer
  - increasing productivity per unit area of land
  - degradation of farmland in areas of long term inappropriate land use practises
- local, provincial, national and international food production
- transportation and trade of food products

### Skills

- classification and sequencing of steps in the production, processing, marketing and distribution of agricultural products
- interpretation of maps and charts
- identification of factors which support or inhibit food production in different areas of the world
- analyzing issues in global agricultural production

### Attitudes

- appreciation of the complex food production, processing and distribution system that exists to meet all our local food needs
- awareness of the diversity of agriculture related activities and occupations
- appreciation of international nature of food production
- concern regarding problems in worldwide food production

**YEAR 1:**

**WHAT IS AGRICULTURE?:**

**AN OVERVIEW OF THE AGRICULTURE INDUSTRY**

| Topic Outline   | Student Activities  | Resources  |
|---|---|--|
| 1. Diversity of agricultural operations<br>(both urban and rural)<br>– processing<br>– production<br>– marketing and distributing | Students:<br>view film and/or video to survey Alberta agricultural activity<br>collect and classify newspaper articles related to agriculture<br>– news items<br>– advertisements for agricultural products<br>– classified advertisements<br>– business section items<br><br>identify major food processing operations |  |
| 2. Agriculture as both producer and consumer of community services  | identify local and Alberta agricultural products<br>– farm products<br>– processed products<br><br>read and discuss community services that support farm operations<br>– in local area<br>– in province<br>– in Canada  |  |
| 3. Personal/social perspective  | list agriculture related careers<br><br>compare current agricultural practises in Canada to those of 50 and 100 years ago<br><br>compare Canadian agricultural production methods with those of other countries   |  |
| 4. Variation in global production and consumption patterns  | <br>discuss what is considered food in different parts of the world<br><br>identify imported agricultural products<br><br>discuss why these products are imported rather than produced locally  | <p><b>Note:</b> The right hand column has been left blank in this field test draft.<br/>           Teachers are asked to note references that have been found particularly useful. (See appendix 1 for a listing of related resources)</p> |

**YEAR 1:**

**WHAT IS AGRICULTURE?:**

**AN OVERVIEW OF THE AGRICULTURE INDUSTRY**

| Topic Outline  | Student Activities  | Resources |
|--|---|-----------|
| Students:<br><br>4. continued<br><br>5. Alberta's role in food production <ul style="list-style-type: none"><li>- Alberta operations</li><li>- Alberta and Canada</li><li>- Canada and the world</li></ul> | <p>view and discuss information regarding Alberta farm production of various foods, comparison with production of these foods in other countries and other areas</p> <p>prepare a pot luck lunch featuring Alberta products and/or foods from other cultures</p> <p>identify areas in which local, Alberta and Canadian expertise in food production is being shared worldwide</p> <p>view, read and discuss information on world trade in food</p> <p>identify transportation links by which trade takes place: routes and means of transportation</p> <p>read, view and discuss issues in world agricultural production</p> |           |

# THEME 1: Production Processing and Marketing

## Overview

This unit follows a case study approach. The intent of the unit is to provide a practical study of production, processing and marketing through the direct study of a particular agriculture industry. The dairy industry has been used to illustrate the development of the case study but the approach followed here may be adapted to any other agriculture related industry. Emphasis is to be placed on consumer perspective, i.e., food needs and preferences and their influence on the agriculture industry. In keeping with a consumer perspective, it is suggested that the unit be approached first by examining local food products in relation to consumer needs and preferences. The stages leading up to the final product can then be traced in relation to this initial perspective on the industry.

Opportunities are provided within the unit for students to become involved in activities that are realistic examples of activities within agricultural industries. In particular, students will have opportunities to take initiatives in the design and development of consumer surveys, in the preparation of a sample product and in the design of a sample marketing strategy.

## Objectives

### Concepts

- consumption
- consumer needs and preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- transportation and storage
- career specializations and expertise
- local production as a component of provincial and national and international production

### Skills

- monitoring personal consumption
- assessing consumer needs and preferences
- classifying products
- identifying steps in processing and packaging
- examining role of consumer preferences in determining products and packaging
- designing and evaluating approaches to marketing

### Attitudes

- awareness of the complex and multifaceted nature of an agricultural production industry
- appreciation of the consumer - producer relationship
- appreciation of the role of technologies in agricultural production, processing and marketing
- awareness and appreciation of opportunities for careers in agriculture related industry

## Example Topic: Milk Products

**YEAR 1:** THEME 1:

**PRODUCTION PROCESSING AND MARKETING:**

**MILK PRODUCTS**

| <b>Topic Outline</b>  | <b>Student Activities</b>   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Focus on milk products</li> <li>2. Monitoring personal consumption</li> <li>3. Needs and preferences</li> <li>4. Merchandising and packaging of food</li> </ol> | <p>Students:<br/>sample dairy products</p> <p>examine the range of dairy products, identifying characteristics and uses of the various products</p> <p>monitor and record personal and family consumption of milk products; construct charts and graphs of the results</p> <p>estimate the quantity of milk products consumed in a year: (1) by individuals at different age levels and (2) by a community of people, such as the community made up of the families of all members of the class</p> <p>identify differences in the amounts of milk products used by different age groups, and also their preferences for different groups of milk products</p> <p>discuss and identify characteristics of different forms of milk products that have appeal for different consumers</p> <p>examine advertisements for milk products and identify the appeal to the consumer</p> <p>discuss the significance of dairy products for nutrition: identify proportions of daily nutritional needs that are met by milk products</p> <p>examine packaging: sizes, forms, labeling and visual layout of packages</p> <p>prepare a hypothetical marketing strategy for a new line of dairy products: discuss the nature of the product, who the consumers would be; also design the packaging and a series of advertisements</p> <p>focus on one or two products such as cheese and yogurt: examine the steps in production of these products</p> |

**YEAR 1:****PRODUCTION PROCESSING AND MARKETING:****MILK PRODUCTS****Topic Outline**

5. Local production and processing

6. Transportation and storage

7. Specializations and expertise

8. Provincial and national perspective

**Student Activities****Students:**

examine print and visual materials to learn the steps in dairy processing

visit a dairy or dairy product processing facility

examine the essentials of a dairy farm operation, i.e.: livestock selection and management, grazing operations, feed production and preparations, milking operations and sanitary and health considerations

where possible, visit a dairy farm

construct a network or flow chart that illustrates the stages of production, processing and marketing of a particular dairy product

identify materials and services that are required to support a dairy operation, i.e., workforce and expertise; feed, food supplements and medicines; land, structures and equipment; energy and transportation

construct a network chart that illustrates the interrelationship of dairy industry related occupations

examine print or visual materials that show the production and consumption of dairy products at the provincial, national and international levels

identify major patterns of trade in dairy products at local, provincial, national and international levels

**Resources**

## THEME 2: Technology and Research: Mechanical Technologies

### Overview

In this case study, students consider practical problems which have faced farmers since the earliest times: how to plant, harvest and mill grain; and to do these things in a way which is both efficient and effective. The development of techniques and specialized equipment are presented as a form of problem solving where the need for the technology exists first, then the inventions and new techniques follow. Students are presented with the problems, then consider both their own ideas and the technologies that have been specifically developed to solve these problems. By tracing the historical development of agricultural equipment, students are able to understand and appreciate the significance of improvements through the years.

Note that although grain technology has been used as an example for this case study, the objectives for the unit can be achieved through the study of any food production or processing industry.

### Objectives

#### Concepts

- physical work inherent in agriculture
- specific tasks to be performed in producing a particular agricultural product (tasks and subtasks)
- power sources: manual, animal, fuels, electrical sources
- manual and mechanical approaches to production
- technology as problem solving (finding effective and efficient ways to get a job done)
- effectiveness of technologies
- efficiency of technologies
  - efficiency in use of human time and energy
  - efficiency in use of land
  - efficiency in use of other resources
- safety of technologies
- alternate technologies

#### Skills

- analysis skills in identifying sequences of tasks to be performed
- creative thinking skills in identifying alternate approaches to solving a practical problem
- drawing and designing skills in making drawings of devices to perform given tasks
- construction skills in building models of equipment

#### Attitudes

- appreciation of the human energy and expertise that go into agricultural production
- awareness of human progress in applying technology to agricultural production
- awareness of self as a problem solver
- awareness of the effect of agricultural technology on the overall quality of life
- awareness and appreciation of opportunities for careers in agriculture related industry

#### Example Topic: Grain Production and Processing Technology

**YEAR 1:** THEME 2:

**TECHNOLOGY AND RESEARCH:**

**MECHANICAL TECHNOLOGIES**

| Topic Outline   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Manual work and mechanization</li> <li>2. Technology as problem solving</li> <li>3. Examining specific examples of locally used technology (may be farm based or based on processing of farm products)</li> </ol> |  |

| Students:   | Student Activities |
|---|--------------------|
| <p>separate grain from a head of wheat by hand dissection</p> <p>learn basic nomenclature regarding grain types and parts of grain plants</p> <p>discuss alternate technologies to separate grain</p> <p>use early technologies to separate grain, i.e., flailing and winnowing (in schoolyard using sticks to break the heads, and dropsheets and the wind to separate the grain from the chaff)</p> <p>"invent" devices that will automatically remove grain from heads (producing a drawing of a hypothetical machine as well as an explanation of how that machine or model would work)</p> <p>identify other operations which must be performed as part of field operations in the planting and harvesting of grain</p> <p>discuss seed planting: how deep and at what distance apart</p> <p>challenge students to design a model "seed planter" using simple paper and plastic materials found around the home</p> <p>use a hammer and block as a crude milling device for seeds; challenge students to describe how the equipment would need to be improved to be more effective and to be useful on a large scale</p> <p>use the flour produced by students to make bread; compare the quality of their fresh ground flour to commercially produced flour</p> |                    |

**YEAR 1:**      **THEME 2:****TECHNOLOGY AND RESEARCH:****MECHANICAL TECHNOLOGIES**

| Topic Outline  | Student Activities  |
|--|---|
| 4    Improvements in effectiveness, efficiency and quality of life resulting from use of technology<br><br>5    Power technologies<br><br>6.   Safety considerations | <p>Students:</p> <p>view and read materials that show the advance of technology used in the grain industry</p> <p>identify tasks which need to be done in the transportation, drying, storage and milling of grain</p> <p>describe and/or "invent" machines to perform these functions</p> <p>visit a farm implement dealership or a local farm to examine machinery and learn the principles on which the machinery is based</p> <p>prepare a flow chart to illustrate the steps in production and processing of grain</p> <p>visit a museum to view and examine early grain farming and processing equipment; drawing and describing selected pieces of this equipment</p> <p>prepare a chart that outlines the development of a particular agricultural technology: the chart indicates the problem that was being worked on at each stage and the specific improvement that was made</p> <p>identify power sources in equipment</p> <p>identify means by which power is transferred from one part of a machine to another</p> <p>identify means by which power is transferred from one part of a machine to another</p> <p>identify safety concerns with power equipment: danger points and dangerous operations</p> <p>view and read material that illustrates safe operation of equipment</p> |

## THEME 3: Resource Management: Water

### Overview

Water is a critical resource to agriculture. In many areas the supply of water is the limiting factor which determines what crop can be successfully grown, and in all areas it influences the size and quality of the crop. The study of water within an agriculture unit thus focuses on the natural supply of water within the province and how that supply can be managed for effective agricultural use.

### Objectives

#### Concepts

- water needs
- water resources
- landforms and water supply
- variation in water supply
- agricultural water use and management
  - soil moisture
  - subsoil water
  - conservation practises
  - irrigation and drainage
- water rights
- water issues

#### Skills

- interpreting charts and maps
- identifying relationships between water supply and topography
- generating alternatives regarding ways to meet water needs
- evaluating strategies for water management
- identifying tradeoffs in water uses
- identifying land use practises which affect available water

#### Attitudes

- awareness of the importance of water resources
- awareness and appreciation of water as a limited resource
- conservation ethic
- awareness and appreciation of opportunities for careers in water management

**YEAR 1:** THEME 3:

**RESOURCE MANAGEMENT:**

**WATER**

| Topic Outline  | Student Activities   |
|--|--|
| <ol style="list-style-type: none"> <li>1. Introduction: for water needs</li> <li>2. Water sources</li> <li>3. Water supply</li> </ol> <ul style="list-style-type: none"> <li>- weather/climate</li> <li>- natural transport systems</li> </ul> | <p>Students:</p> <p>consider the effects of a month totally without water</p> <ul style="list-style-type: none"> <li>- on humans</li> <li>- on plants of different kinds</li> <li>- on the landscape</li> </ul> <p>observe dried plants and seeds: discuss changes in plants and animals in extreme dry conditions i.e., death and dormancy</p> <p>discuss the role of water in living things</p> <ul style="list-style-type: none"> <li>- water content of living things</li> <li>- water as the basic medium for circulation in living things</li> <li>- water flow through plants: absorption, conduction, transpiration</li> </ul> <p>consider how much water is enough to support life: view a film or read about the water needs of particular plants and animals</p> <p>identify sources of water available to living things</p> <p>construct a chart that indicates water sources for a variety of plants and animals</p> <p>review the water cycle and discuss the role of the water cycle in replenishing water supplies</p> <p>identify forms of precipitation and water equivalent</p> <p>identify zones in which rainfall is greatest and least in relation to prevailing winds and topography; e.g., Palliser triangle in Alberta</p> <p>discuss the role of topography in determining rainfall</p> <p>view and interpret graphs or charts which indicate monthly rainfall in selected areas of the province</p> |

**YEAR 1:****RESOURCE MANAGEMENT:****WATER****Topic Outline**

3. continued

4. Water management  
- local area  
- provincial, national and international perspective

**Student Activities**

Students:

discuss variation in rainfall that occurs in yearly cycles and also random variation in rainfall that occurs within the growing season; identify range of rainfall due to local variation in rainfall patterns

review and discuss examples of variation in crop production that result from changes in the amount and timing of yearly rainfall

read and view material on surface and subsurface water

identify major surface water resources in Alberta

view or read about subsurface water resources and how they are accessed

measure soil moisture – read and discuss factors which affect availability of water e.g.: runoff patterns, summer temperatures

read about and discuss techniques for maximizing farm use of yearly water supply: soil moisture conservation

measure water hardness and discuss the impacts of water hardness

read, view and discuss the range of farm water uses (in addition to direct application to crops) – constructing a model of a section of land including topographic features, water features and related improvements

read and view materials on reservoirs and irrigation systems (both large and small scale)

prepare a water budget for a farm

**Resources**

| YEAR 1: | THEME 3:<br>WATER<br>RESOURCE MANAGEMENT: | Topic Outline          | Student Activities   | Resources |
|---------|---|------------------------|--|-----------|
|         |   | 5. Problems and issues | <p>Students:</p> <ul style="list-style-type: none"> <li>discuss competition for water use, role play or dramatize a water management issue</li> <li>research water resource issues based on newspapers and other media sources</li> <li>debate a water issue</li> <li>read and discuss impacts of agriculture on downstream water quality</li> <li>discuss need for community decisions regarding water use</li> <li>read and discuss international problems in water use</li> </ul> |           |
|         |   |                        |  |           |

## **YEAR TWO PROGRAM**

## THEME 1: Production, Processing and Marketing

### Overview

This unit follows a case study approach. The intent of the unit is to provide a practical study of production, processing and marketing through the direct study of a particular agricultural industry. The meat processing and production industry has been used to illustrate the development of the case study but the approach followed here may be adapted to any other agriculture related industry.

Overall the unit follows a similar form to that of the first unit in the year one program, but for this unit the main focus is on the nutritional value of the products rather than consumer preferences. The unit will thus consider dietary needs as well as the relative nutritional value of various food products prepared in a variety of forms.

### Objectives

#### Concepts

- nutrition (review)
- nutrient composition of foods: proteins, carbohydrates, fats, minerals and vitamins
- consumer needs versus consumer preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- breed development as a means of increasing quantity and quality of product
- transportation and storage
- local production as a component of provincial and national and international production

#### Skills

- monitoring personal consumption by nutrient groups
- assessing consumption in relation to nutritional needs
- identifying and classifying products
- comparing alternate sources of nutrient needs
- analyzing steps in processing and packaging
- analyzing role of consumer preferences in determining products and packaging

#### Attitudes

- awareness of the importance of diet to human growth, development and continuing function of a healthy body
- awareness of the complex and multifaceted nature of a food production industry
- appreciation of the consumer – producer relationship
- appreciation of the role of technologies in the production and processing of food
- awareness and appreciation of opportunities for careers in agriculture related industry

### Example Topic: Meat Products

**YEAR 2:**

**PRODUCTION PROCESSING AND MARKETING:**

**MEAT PRODUCTS**

| <b>Topic Outline</b>   | <b>Student Activities</b>   |
|--|---|
| <p>1. Consumption</p> <p>2. Nutrient composition of foods: proteins, carbohydrates, fats, minerals and vitamins (review)</p> <p>3. Monitoring meat consumption and preferences</p> <p>4. Packaging and marketing</p> | <p>Students:</p> <p>identify meat products commonly used as food, discuss taste and nutritional value of each</p> <p>monitor and classify personal and family consumption of food products; construct charts and graphs of the results</p> <p>estimate the quantity of meat and meat products consumed on an annual basis</p> <p>identify alternate sources of protein</p> <p>discuss factors which affect the type of protein sources used i.e., availability and cost of different forms, nutritional value and cultural values</p> <p>discuss the controversy regarding the role of meat products in meeting nutritional needs</p> <p>view and discuss methods used in preparing meats; comparing the nutritional merits of alternate methods</p> <p>discuss and identify characteristics of different forms of meat products that have appeal for different consumers</p> <p>identify differences in use of products by different cultural groups, and preferences for different kinds of meat products</p> <p>examine advertisements for meat products and identify the appeal to the consumer</p> <p>examine packaging: sizes, forms, labelling and visual layout of packages</p> <p>prepare a hypothetical marketing strategy for a new line of meat products: discuss the nature of the product, who the consumers would be; also design the packaging and a series of advertisements</p> |

**Note:** The right hand column has been left blank in this field test draft.  
Teachers are asked to note references that have been found particularly useful. (See appendix 1 for a listing of related resources)

**YEAR 2:**

**THEME 1:**

**PRODUCTION PROCESSING AND MARKETING:**

**MEAT PRODUCTS**

| Topic Outline   | Student Activities  | Resources |
|---|---|-----------|
| <p>5. Processing and production</p> <p>6. Breed development as a means of increasing quantity and quality of product</p> <p>7. Career specializations and expertise</p> | <p>Students:<br/>           examine print and visual materials to learn the steps in meat processing<br/>           consider one or two products such as hamburger and sandwich meat, examining the steps in the production of these products<br/>           examine the full range of animal products, identifying characteristics and uses of the various products<br/>           read or view materials that describe animal production operations: e.g., grazing operations and feed lots<br/>           read or view materials that describe the relative performance of different breeds<br/>           read or view materials on the improvement of the quality and quantity of meat production through breed improvement<br/>           examine the essentials of a beef, hog, sheep or poultry farm operation, i.e.: livestock selection and management, grazing operations, feed production and preparations and sanitary and health considerations<br/>           identify materials and services that are required to support a farm production, i.e.: workforce and expertise; feed, food supplements and medicines; land, structures and equipment; energy and transportation where possible, visit a beef, hog, sheep or poultry farm<br/>           construct a network chart that illustrates the interrelationship of occupations in an animal product industry<br/>           construct a network or flow chart that illustrates the stages of production, processing and marketing of a particular animal product</p> |           |

**YEAR 2:****PRODUCTION PROCESSING AND MARKETING:****MEAT PRODUCTS**

| <b>Topic Outline</b>  |
|---|
| 8. Transportation and storage   |
| 9. Health Issues  |
| 9. Local production as a component<br>of provincial, national and<br>international production |

| <b>Student Activities</b>  |
|--|
| <p>Students:</p> <p>read and view materials that describe the transportation and storage of meat products</p> <p>compare alternate technologies for preserving meat: refrigeration, freezing, drying</p> <p>discuss health issues regarding the storage and display of meat products: storage temperature and shelf life</p> <p>read and discuss materials that describe health issues related to the use of hormones and growth supplements in meat production</p> <p>examine print or visual materials that show the production and consumption of animal products at the provincial, national and international levels</p> <p>identify major patterns of trade in meat products at local, provincial, national and international levels</p> |

## THEME 2: Technology and Research

### Topic: Technology for Planning, Monitoring and Managing

#### Overview

The process of farm production can be viewed as a series of planned interventions that will enhance the development of a particular food crop. For every action that the farm operator takes there is usually a best time to do it and generally a most effective way. The decisions of when to plant, how deeply, when to provide fertilizers, supplements, or special treatments and what other conditions should be modified are all dependent on a wide range of changing conditions, each of which need to be monitored if appropriate actions are to be taken.

Intensive agricultural production requires an increasingly high level of planning, monitoring and management. Green house production, the raising of specialized animal breeds and the use of integrated pest management are all examples of such intensive production processes.

#### Objectives

##### Concepts

- environments
  - environmental factors
  - natural environments
  - artificial environments
  - micro environments
- competition for nutrients, water and light
- plant cycles
- pest and disease management
- control systems
- optimum conditions for plant growth

##### Skills

- monitoring plant growth and plant health
- measuring soil moisture and humidity
- application of techniques for plant propagation:  
planting seeds and bulbs, making cuttings
- preparing a "growth chamber" to meet the needs of a particular plant
- identifying variables that affect plant growth
- creative and critical thinking regarding alternate ways to meet plant needs
- maintaining a record of plant treatments and plant growth
- identifying greenhouse pests and weeds

##### Attitudes

- appreciation of the complexity of plant care in controlled environmental conditions
- appreciation of the need for accuracy and precision in the monitoring and managing of living things
- awareness of career opportunities in plant care and plant research

#### Example Topic: Greenhouse Management

**YEAR 2:**

**TECHNOLOGY AND RESEARCH:**

**GREENHOUSE MANAGEMENT**

**Topic Outline**

1. Introduction to growing plants:  
some basic techniques
2. Identification of plant needs
  - environmental factors to be considered
  - general needs
  - cyclic needs
  - specialized needs
3. Monitoring the crop

| <b>Topic Outline</b>  | <b>Student Activities</b> |
|---|---------------------------|
| <p><b>Students:</b></p> <ol style="list-style-type: none"> <li>1. collect and dry seeds from food or ornamental plants<br/>make cuttings of different kinds of plants<br/>propagate plants by means of seed, bulbs, and cuttings<br/>visit a greenhouse, nursery, conservatory or plant store; view plant care equipment and procedures</li> <li>2. view and discuss unhealthy plants, diagnose and discuss possible problems<br/>discuss general needs of all plants and identify of specialized needs of plants:<br/>light, humidity, soil conditions<br/>read, view and identify natural plant environments<br/>read, view and discuss cyclic needs of plants; diurnal temperature and light cycles, yearly cycles for light, temperature and moisture<br/>read and discuss greenhouse conditions; identify how basic plant needs are met and how conditions are varied to meet particular plant needs<br/>monitor the growth of a household plant<br/>prepare a growth record of a group of plants and show this development graphically; also include information on plant treatments as part of the record</li> </ol> | <p><b>Resources</b></p>   |

**YEAR 2:**

**TECHNOLOGY AND RESEARCH:**

**GREENHOUSE MANAGEMENT**

| Topic Outline                               | Student Activities   |
|---|--|
| <p>4. Specialized equipment and systems</p> | <p>Students:</p> <ul style="list-style-type: none"> <li>build a miniature growth chamber using improvised materials e.g., cardboard box and plastic wrap</li> <li>improvise environmental controls in the growth chamber</li> <li>grow plants under varied conditions: light, soil, moisture etc.</li> <li>read about or view the intensive greenhouse production of a particular type of plant crop</li> <li>identify the optimum conditions for production of a particular plant</li> <li>read about or view self regulating control mechanisms that adapt conditions to the changing needs of plants</li> <li>compare home greenhouses to commercial production greenhouses</li> <li>brainstorm, "invent" and produce drawings of future plant environments</li> <li>read about or view the growth of plants under stressful conditions: discuss uses of stress in inducing flowering and fruiting in some species and in the development of bonsai</li> <li>identify plant pests and diseases</li> <li>read about or view techniques for pest management</li> <li>grow plants by hydroponics</li> </ul> <p>5. Pest and disease control</p> <p>6. Skills and technologies for plant propagation</p> |

**YEAR 2:**

**TECHNOLOGY AND RESEARCH:**

**GREENHOUSE MANAGEMENT**

**Topic Outline**

7. Research
8. Applications for particular plant production needs

**Student Activities**

**Students:**

visit a research facility, view a film or hear a presentation by a guest speaker on a current research topic

read about or view new technologies for production of new varieties that adapt well to greenhouse production

read about and discuss food needs in difficult climates where food might be produced under controlled conditions

read about and discuss the economic costs and benefits: Where is this type of production practical? (e.g., consider the use of waste heat energy from power plants as a source of heat)

read, discuss, and brainstorm regarding plant production in space

**Resources**

## THEME 3: Resource Management: Soils

### Overview

Soil is a basic agricultural resource. The quality of soils is a major determiner of the success of agricultural production: its loss or degradation is thus of major concern. This unit examines the characteristics of soil that determine its overall quality and considers problems in soil management.

### Objectives

#### Concepts

- soil functions
- soil characteristics
  - composition
  - soil nutrients/essential minerals
  - porosity
  - acidity/alkalinity
- soil development
- nutrient cycles
- soil degradation
  - erosional losses
  - nutrient losses: leaching
  - salinization, alkinization and acidification
- soil management
  - soil assessment
  - tillage
  - chemical treatments/recycling of nutrients
- fertilizing: organic and inorganic nutrients
- worldwide soil problems
  - loss of arable land through erosion
  - loss of land through urbanization and transportation corridors
- soil management for household gardening

#### Skills

- classifying soil components
- describing soil types
- measuring mineral content of soil
- measuring pH of soil
- identifying appropriate measures for preventing erosion in given situations
- identifying and describing problems in soil management
- identifying alternatives in soil management
- growing plants without soil

#### Attitudes

- awareness of the importance of soil resources
- awareness of the effect of land use decisions on soil retention and soil characteristics
- awareness and appreciation of soil as a limited resource
- conservation ethic
- awareness and appreciation of opportunities for careers in soil science and soil management

| Topic Outline   | Student Activities   |
|---|--|
| Students:<br>1. Functions of soil<br>2. Soil characteristics<br>3. Relationship to environment/soil development | view a plant without soil (include roots, stems and leaves), and discuss how the plant is adapted for survival; focus on the plants adaptation for life in soil<br>review plants that naturally grow in soilless environments: discuss ways in which these plants are specialized<br>discuss adaptations of plants to soil<br>view film or video to introduce soil components and types of soil<br>examine soil using a hand lens<br>separate soil components by sieving and by sedimentation<br>identify components<br>identify origins of soil components<br>identify soil types by proportion of components<br>discuss "soil manufacture": How would you go about making soil from scratch?<br>read, view and discuss natural processes of soil development<br>observe decomposition of organic materials in a classroom or outdoor mini-study: (1) on the surface of soil, (2) in subsurface conditions<br>prepare and observe compost<br>examine soil by hand lens and microscope to observe microscopic and invertebrate fauna |

| Topic Outline   | Student Activities   | Resources |
|---|--|-----------|
| Students:<br>1. Functions of soil<br>2. Soil characteristics<br>3. Relationship to environment/soil development | view a plant without soil (include roots, stems and leaves), and discuss how the plant is adapted for survival; focus on the plants adaptation for life in soil<br>review plants that naturally grow in soilless environments: discuss ways in which these plants are specialized<br>discuss adaptations of plants to soil<br>view film or video to introduce soil components and types of soil<br>examine soil using a hand lens<br>separate soil components by sieving and by sedimentation<br>identify components<br>identify origins of soil components<br>identify soil types by proportion of components<br>discuss "soil manufacture": How would you go about making soil from scratch?<br>read, view and discuss natural processes of soil development<br>observe decomposition of organic materials in a classroom or outdoor mini-study: (1) on the surface of soil, (2) in subsurface conditions<br>prepare and observe compost<br>examine soil by hand lens and microscope to observe microscopic and invertebrate fauna |           |

YEAR 2:

THEME 3:  
RESOURCE MANAGEMENT:

SOIL

| Topic Outline  | Student Activities  |
|--|---|
| <p>3. continued</p> <p>4. Plant adaptations to specialized soil conditions</p> <p>5. Soil management</p> <ul style="list-style-type: none"> <li>- soil nutrients</li> <li>- natural cycles and fertilizers</li> <li>- chemical manipulation</li> <li>- mechanical manipulation of soil</li> </ul> <p>6. Soil losses</p> <ul style="list-style-type: none"> <li>- erosion</li> <li>- loss through urbanization</li> <li>- percolation, leaching, salinization and alkalinization</li> </ul> | <p>Students:</p> <p>identify nutrient cycles in natural and agricultural systems</p> <p>test soil for mineral composition</p> <p>test soil for pH</p> <p>read, view and discuss material that outlines different nutrient and soil needs of different plants</p> <p>view similar plants growing under different soil conditions and/or different soil treatments</p> <p>view plants that have grown under extreme soil conditions, observing adaptations and signs of stress</p> <p>read and view material that describes different soil management practises</p> <p>read, view and discuss soil management alternatives, i.e., chemical manipulations vs recycling of organic materials, cultivation vs no cultivation, irrigation vs water conservation</p> <p>examine soil properties in relation to water: water capacity and porosity</p> <p>identify soil, terrain and climatic factors that contribute to erosion</p> <p>observe erosion in city and farm settings</p> <p>observe effects of evaporation on soil surfaces</p> <p>read and view materials on the effects of water on movement of soil nutrients and pollutants</p> <p>identify land use decisions and their effect on soils</p> |

**YEAR 2:** THEME 3:

**RESOURCE MANAGEMENT:**

**SOIL**

| Topic Outline  | Student Activities  |
|--|---|
| <p>7. Local, provincial, national and international problems in soil management</p> <p>8. Soil management in urban and indoor environments</p> <p>9. Soil issues</p> | <p>read, view and discuss soil conservation practises and problems in other countries, e.g., slash and burn soil use, erosional problems of Ethiopia and of Western China</p> <p>read, view and discuss the effects of urbanization on soils</p> <p>read, view and discuss practises for maintenance of urban soils</p> <p>read, view and discuss soils used for indoor gardening</p> <p>discuss artificial environments, comparing soil management procedures used in indoor plant operations with soil development and maintenance within natural environments</p> <p>discuss issues related to soil management</p> |

| Topic Outline  | Student Activities |
|--|--------------------|
| <p>Students:</p> <p>read, view and discuss soil conservation practises and problems in other countries, e.g., slash and burn soil use, erosional problems of Ethiopia and of Western China</p> <p>read, view and discuss the effects of urbanization on soils</p> <p>read, view and discuss practises for maintenance of urban soils</p> <p>read, view and discuss soils used for indoor gardening</p> <p>discuss artificial environments, comparing soil management procedures used in indoor plant operations with soil development and maintenance within natural environments</p> <p>discuss issues related to soil management</p> |                    |

## **YEAR THREE PROGRAM**

# THEME 1: Production, Processing and Marketing

## Overview

This unit follows a case study approach. The intent of the unit is to provide a comparative study of two or more agriculture industries, examining energy and resource inputs in relation to food production. The key idea of the unit is that different forms of agricultural production and processing each have implications for the amount of energy and other resources required. The energy used in food production contributes in various ways to the final energy of the food product, but this food energy is generally very small in relation to the large energy expenditure involved in its production and processing.

The outlines provided for this case study use the beef industry and the production of vegetable crops as examples, but the approach followed here may be adapted to other agriculture related industries.

## Objectives

### Concepts

- range of food crops
- consumption
- consumer needs and preferences
- products
- merchandising
- processing and packaging
- production (farm operations)
- transportation and storage
- inherent and invested energy
- food pyramid
- local production as a component of provincial, national and international production

### Skills

- assessing consumer needs and preferences
- assessing energy content of food
- comparing and classifying products
- analyzing steps in processing and packaging
- identifying steps in which invested energy is added
- identifying role of consumer preferences in determining products and packaging

### Attitudes

- awareness of the complex and multifaceted nature of a food production industry
- awareness of the role of energy in food production
- appreciation of the consumer – producer relationship
- appreciation of the role of technologies in the production and processing of food
- awareness and appreciation of opportunities for careers in agriculture related industry

Recommended Topic: Field Crops: Food and Forage

**YEAR 3:**

**PRODUCTION PROCESSING AND MARKETING:**

**FIELD CROPS**

**Topic Outline**

1. Food crops

2. Food consumption

3. Product preferences

**Student Activities**

**Students:**

identify the variety of products which are produced as field crops in Alberta for direct human consumption, identifying characteristics and uses of the various products

monitor and record personal and family consumption of food products; classify the foods according to origin and form, i.e.: (1) plants in original form, (2) processed plant products, (3) meat, (4) processed meat products and (5) mixed source processed products. Note that many foods will not fit neatly into these categories. Some discussion will be needed to come to terms with what is meant by a processed food.

construct charts and graphs of the results

estimate the quantity of products consumed in a year: (1) by individuals at different age levels and (2) by a community of people, such as the community made up of the families of all members of the class

identify differences in use of products by different age groups, and preferences for different groups of products

discuss reasons for different patterns of food use  
(Identify food preferences, concerns regarding additives, cultural patterns, economic considerations, time and convenience considerations etc.)

discuss and identify characteristics of different forms of food products that have appeal for different consumers

examine advertisements for products and identify the appeal to the consumer

| <b>Topic Outline</b> | <b>Student Activities</b>   | <b>Resources</b> |
|----------------------|---|------------------|
|                      | <p><b>Students:</b></p> <p>identify the variety of products which are produced as field crops in Alberta for direct human consumption, identifying characteristics and uses of the various products</p> <p>monitor and record personal and family consumption of food products; classify the foods according to origin and form, i.e.: (1) plants in original form, (2) processed plant products, (3) meat, (4) processed meat products and (5) mixed source processed products. Note that many foods will not fit neatly into these categories. Some discussion will be needed to come to terms with what is meant by a processed food.</p> <p>construct charts and graphs of the results</p> <p>estimate the quantity of products consumed in a year: (1) by individuals at different age levels and (2) by a community of people, such as the community made up of the families of all members of the class</p> <p>identify differences in use of products by different age groups, and preferences for different groups of products</p> <p>discuss reasons for different patterns of food use<br/>(Identify food preferences, concerns regarding additives, cultural patterns, economic considerations, time and convenience considerations etc.)</p> <p>discuss and identify characteristics of different forms of food products that have appeal for different consumers</p> <p>examine advertisements for products and identify the appeal to the consumer</p> |                  |

**Note:** The right hand column has been left blank in this field test draft.  
Teachers are asked to note references that have been found particularly useful. (See appendix 1 for a listing of related resources)

**YEAR 3:**           **THEME 1:**

**PRODUCTION PROCESSING AND MARKETING:**

**FIELD CROPS**

| <b>Topic Outline</b>  | <b>Student Activities</b>  | <b>Resources</b> |
|---|--|------------------|
| <p>4. Energy consumption</p> <p>5. Energy investment in food (e.g., fuel, fertilizers, processing, packaging)</p> <p>6. Local farm operations</p> | <p>use charts that show the energy content of various foods, determine personal food energy consumed</p> <p>compare total food energy consumed with average figures regarding food energy needs .</p> <p>compare the food energy of different diets, including some typical examples from third world countries</p> <p>examine packaging: sizes, forms, labelling and visual layout of packages monitor and record the quantity of packaging that comes with a week's supply of the family groceries</p> <p>read and discuss material that describes the energy cost of food processing and packaging</p> <p>create a new product, design a package for the product and market the product in school</p> <p>prepare a marketing strategy for a line of products designed for consumers who prefer a minimum of processing and packaging</p> <p>identify energy cost in farm production, i.e., fuel and fertilizers</p> <p>read or view materials which describe the field production of vegetable crops</p> <p>read or view materials which describe the production of beef cattle</p> <p>read or view materials that indicate the quantity of food that can be produced per hectare of various field crops</p> <p>read or view similar data on the production of forage crops</p> |                  |

**YEAR 3:**      **THEME 1:**

**PRODUCTION PROCESSING AND MARKETING:**

**FIELD CROPS**

| Topic Outline      |  |
|--------------------|--|
| 7. Energy Analysis | <p>Students:</p> <p>analyze the energy requirements for production of various types of food crops</p> <p>construct a food production and processing chart that shows the energy inputs at each stage</p> <p>discuss the concept of a food pyramid; identify the proportion of forage crop food value that is converted to food value of meat product</p> <p>discuss the food and energy tradeoffs in using land for producing cattle feed rather than for raising crops for direct human consumption</p> <p>read and view materials which describe intensive methods of food production, requiring large amounts of energy and equipment; discuss the energy implications of these food production methods</p> <p>read and view materials that describe alternative methods of food production, including methods which use minimal inputs of energy and materials</p> <p>identify regions in Alberta and Canada where soil and climate support high levels of productivity; identify other regions where production is marginal</p> <p>identify regions of Alberta that are more suited to grazing than to production of field crops</p> <p>read or view materials which compare agriculture in Canada to the agriculture of third world countries; discuss difference in use of technologies and discuss reasons for these differences</p> <p>read or view material that compares the consumption of processed and packaged foods in Canada with consumption patterns in other parts of the world; discuss reasons for these differences</p> |

## THEME 2: Technology and Research

### Overview

The production of high quality animal and plant products requires genetic strains that respond well to the conditions of production. In part, this is a matter of efficiency: only those breeds that can make the most effective use of nutrients available and that will produce the highest quality product will compete well in the marketplace. In many cases it is also a matter of health and survival. Increased use of intensive farm production, often based on raising a single crop or breed, has led to increased susceptibility to disease and to pests. Resistant varieties must be developed to keep pace with increasingly intensive farm production practises.

This unit examines the application of biotechnology to large animal production. A variety of practises are considered, including those practises that are used in developing high quality stock and those that are aimed at enhancing the growth and development of existing breeds.

### Objectives

#### Concepts

- breeds and varieties
- genetic characteristics
- principles of cattle breeding
- artificial insemination and embryo transplants
- growth supplements and food additives
- hormones
- biotechnology

#### Skills

- observing animals and interpreting their particular characteristics
- comparing strengths and weaknesses of different breeds
- identifying desirable characteristics
- identifying risks and benefits of use of specialized breeds

#### Attitudes

- respect for animal welfare
- awareness of the role of research and biotechnology in agricultural industries
- awareness of the complex and multifaceted nature of large animal production
- awareness and appreciation of opportunities for careers in biotechnology and veterinary science

### Example Topic: Large Animal Production

**YEAR 3:** THEME 2:

**TECHNOLOGY AND RESEARCH:**

**LARGE ANIMAL PRODUCTION**

| Topic Outline                 |  |
|-------------------------------|--|
| 1 Production: what is desired |  |
| 2 Varieties and breeds        |  |
| 3 Reproduction and breeding   |  |

| Topic Outline | Student Activities   | Resources |
|---------------|--|-----------|
| Students:     | <p>discuss consumer demands for high quality beef, identify characteristics that are desired in beef cattle</p> <p>identify the many kinds of products for which beef cattle are used; include both food and non food uses</p> <p>describe, draw or make models of what the ideal beef cattle would be like</p> <p>read about, view and discuss the variety of breeds of beef cattle and compare data regarding their relative strengths and weaknesses</p> <p>discuss the need for specialized breeds</p> <p>read about, view and discuss problems which may arise in beef production; identify ways in which breed development might lessen or eliminate those problems</p> <p>identify diseases and ailments to which cattle are particularly prone; identify cattle breeds that have greater and lesser resistance to these ailments</p> <p>identify breeds of cattle that are particularly suited to specialized conditions</p> <p>read or view materials which illustrate the distribution of breeds throughout the province</p> <p>hear a farm speaker describe cattle breeds and the need for particular breed characteristics</p> <p>read about or view media materials that describe general principles of cattle breeding</p> <p>read about or view materials which describe the care of cows and calves if possible, visit a cow-calf farm operation</p> |           |

**YEAR 3:**

**TECHNOLOGY AND RESEARCH:**

**LARGE ANIMAL PRODUCTION**

| Topic Outline   | Student Activities   |
|---|--|
| <p>4. Enhanced breeding technologies</p> <p>5. Growth supplements, hormones and medicines</p> <p>6. Issues and controversies</p> <p>7. Canada's role in biotechnology</p> | <p><b>Students:</b></p> <p>read about and view techniques for artificial insemination and in vitro fertilization</p> <p>read about or view media that introduces new genetic technologies and technologies currently under research; discuss the possibilities for future breed development</p> <p>read about, view and discuss the use of growth supplements</p> <p>identify the kinds of treatments that cattle may have to ensure rapid growth</p> <p>identify the kinds of treatments used to prevent or control disease</p> <p>read about or view materials that identify concerns regarding residual effects of treatments and additives in finished meat products; identify standards which must be met to avoid danger to human health</p> <p>debate the value of use of hormones to increase milk production</p> <p>discuss questions of ownership: should a person who has developed a new breed have some kind of ownership of that breed</p> <p>discuss questions regarding concentrating production in very specialized breeds; who will maintain a basic stock of past breeds?</p> <p>read about and discuss Canada's role as a leader in biotechnology</p> <p>identify plant and animal breeds that have been developed in Canada and are now used worldwide</p> <p>discuss Canada's special needs for breed development to suit its northern climate</p> |

## THEME 3: Resource Management: Land Use

### Overview

This unit examines the scope and implications of land use practises. It considers land uses within urban areas as well as rural areas and it examines the basis on which land use decisions are presently made. Key issues are identified and consideration is given to alternatives for the future.

A main theme of the unit is that decisions regarding land use play a large part in determining the nature and extent of agricultural production. What land will be used for agricultural purposes and what crops will be raised are questions that are continually under review. Currently decisions that are made on land use are based largely on economic and practical considerations as seen by the land holder, but increasingly the decisions are becoming a matter of public concern. Both technical and societal considerations will play increasing roles in future land use planning.

### Objectives

#### Concepts

- agricultural land use considerations:
  - quality of soil
  - topography
  - water and climate
  - market value of products
  - costs of operation
  - experience and livelihood of land holder
- available technology
- other land use considerations:
  - urbanization and industrialization
  - resource extraction needs (mining and drilling operations)
  - public concerns regarding environmental quality
  - maintenance of natural environments
- historical change in land use
- sustained yield

#### Skills

- interpreting topographical features on maps and aerial photos
- analyzing land use within a given area
- identifying land use issues
- evaluating alternative land uses
- interpreting a farmstead plan
- drawing a rough site plan for a city lot

#### Attitudes

- appreciation of the diversity of values that come into play in land use decisions
- valuing both the need for agricultural land and the need for natural environments
- awareness and appreciation of opportunities for careers in land use planning

**YEAR 3:** THEME 3:

**RESOURCE MANAGEMENT:**

**LAND USE**

| Topic Outline   |  |
|---|--|
| 1 Assessment of potential land use  |  |
| 2. Planning in urban areas<br>– planning and zoning<br>– layout and landscaping within a site |  |

| Topic Outline  | Student Activities | Resources |
|--|--------------------|-----------|
| Students:<br><br>1 brainstorm potential uses of a vacant lot (based on an example piece of land within the community)<br><br>brainstorm potential uses to which a local piece of farmland might be put: include agricultural uses and non agricultural uses<br><br>rate the alternatives and provide a rationale for the ratings<br><br>identify factors which determine land use in urban areas<br><br>examine newspapers for items which deal with zoning and rezoning of properties<br><br>discuss reasons for zoning<br><br>examine a neighbourhood plan; identify areas for housing, for transportation corridors, for community services and for parkland<br><br>examine a city or town map that shows the overall zoning plan for the city<br><br>estimate the amount of green space per person and also the amount of space covered by improvements of various kinds<br><br>classify the green space within cities according to use; e.g.: lawns, ornamental gardens, vegetable and fruit gardens, wooded areas, water and wetlands, farmland<br><br>identify areas in the city plan devoted to industry, discuss why major industries are usually located together, but separate from residential areas<br><br>examine sample site and landscape plans for urban properties<br><br>prepare a plan for a flower bed<br><br>design and/or model a landscape plan for a city lot |                    |           |

## YEAR 3: THEME 3:

## RESOURCE MANAGEMENT:

## LAND USE

### Topic Outline

3. Planning in rural areas: farmstead planning
  - assessment of land
  - layout of farmstead
  
4. Competing land uses
  - farming versus non-agricultural land needs
  - selection of appropriate crops and livestock
  
5. Problems related to land use

### Student Activities

#### Students:

- identify factors which determine agricultural land use
- review soil assessment and its role in determining land use
- read about, view and discuss agricultural land uses in the local area
- hear a presentation by a district agriculturist on local land use practises
- read about, view and discuss the layout of farmsteads
- is possible, visit a farmstead and make a map showing the layout of agricultural operations and farm improvements

- examine historical material regarding the local community; compare present land use in the local area to that of fifty years ago
- collect and discuss examples of land use controversies from newspapers and other media; identify the basis for positions taken by different groups

- read about and discuss land use practises that degrade agricultural land: overgrazing, overuse of available moisture and minerals, exposure to erosion, inappropriate irrigation practice, and removal of natural pest control organisms

discuss the concept of sustained yield

- read about and view agricultural practises that alleviate or lessen these problems

read about and discuss changes in global land use

### Resources

### Student Activities

### Resources

### Student Activities

### Resources

### Resources

**YEAR 3:**

**RESOURCE MANAGEMENT:**

**LAND USE**

**Topic Outline**

6. Agriculture and the future

**Student Activities**

Students:

- read about and view media materials that describe alternative future land uses, discuss the implications of these possible changes in land use  
discuss the impacts of increasing population, industrialization and urbanization on land use

**Resources**

## **OPTIONAL UNITS**

## **RECOMMENDED OPTIONAL UNITS**

The following outlines provide a suggested treatment for each recommended topic.

1. Agriculture and Human History
  - the emergence of agriculture
  - early techniques and practises
  - the effects of agriculture on historical development
    - locations and patterns of human settlement
    - population
    - trade and commerce
  - invention, innovation and mechanization
  - current practises
  - standard of living and lifestyle
2. Agricultural Horizons: An Examination of Agriculture Around the World
  - food and culture: what is considered food?
  - quality and quantity of food consumption: what do others eat?
  - production practises
  - resources
  - mechanization
  - global food supply
  - international roles of Alberta and Canada
3. Agricultural Services
  - primary, secondary and service industries
  - extent of farm service industries
  - study of example services
    - equipment and machinery
    - supplies
    - transportation and marketing
    - services to farm families
4. Animal Care
  - types of animals: pets, working animals, livestock and wildlife
  - varieties, genetics and breeding
  - example study
    - characteristics
    - growth
    - environmental needs
    - health needs and care
  - humane considerations
5. Bee Keeping
  - bees: characteristics and life cycles
  - culture and care of bees
  - hive location, environments, and bee forage
  - harvesting and processing of honey
  - hive management and safety considerations

**6. Cattle**

- types, genetics, breeding
- production
- products
- health and care
- economic aspects
- related industries

**7. Computers and Agriculture**

- application to planning and farm management
  - accessing and use of data bases
  - record keeping
  - financial planning
  - planning for the future
- applications to automated mechanical systems
  - monitoring, feedback and control systems
  - computerization in existing mechanical systems
  - design and function of future systems

**8. Crop Protection**

- insects: damage, reproduction, population growth
- plant diseases
- abiotic factors
- weeds
- herbicides and pesticides

**9. Farming and Wildlife**

- habitat alteration
  - wetlands
  - forests
- competition for food
- wildlife or pests
- game farming
- harvesting native plants

**10. Forage Crop Production**

- types, genetics, breeding
- nutritional assessment
- production
- harvesting, processing and storage
- economic aspects

**11. Fruit Crops**

- types and varieties
- growth forms
- production
- packaging and processing of fresh fruits
- production and processing of preserved products

12. Fur Farming

- types
- breeding
- health, feeding and care
- processing and preparing furs
- trapping and conservation issues

13. Hogs

- types, genetics, breeding
- production
- products
- health and care
- economic aspects
- related industries

14. Home Gardening and Food Production

- garden environments: what conditions are important?
- soil assessment, enhancement and maintenance
- gardening techniques
- selecting crops; characteristics and needs of common garden plants
- selecting varieties, interpreting the supplier's information
- planning and laying out the garden
- getting an early start: hotbeds and coldframes
- crop protection
- harvesting, storage and preservation of garden crops
- alternative approaches to gardening

15. Horses

- characteristics and structure
- types, genetics, breeding
- uses: work, pleasure, sport
- growth
- care and training
- marketing

16. Imports and Exports

- food as a global resource
  - where does our food come from?
  - what foods do we import?
  - why do we import some foods rather than produce our own?
  - Alberta exports
  - what products does Alberta produce that are surplus to our needs?
  - what countries have need of products produced in Alberta?
  - what is exported?
  - where do the products go?
- transportation and shipping

17. Indoor Gardening

- household plants: needs, monitoring and maintenance
- artificial environments for meeting plant needs
  - greenhouses
  - artificial lighting
  - hydroponics
- selecting plants, familiarity with some common plants
- floriculture

18. Irrigation

- needs
- planning: large and small scale
- equipment
- irrigation in Alberta
- special problems: changes in drainage salinization and patterns
- economics

19. Landscape and Trees

- lawns and turf
- trees and shrubs
- pruning, grafting, budding, thinning
- selection of appropriate varieties
- design

20. Marketing and Advertising

- the consumer: wants and needs
- processing and packaging to appeal to the consumer
  - convenience foods
  - package appeal
- advertising strategies
  - examples and principles
  - making advertisements
- being an intelligent consumer
  - food value and price value
  - packaging costs and product costs

21. Market Gardening

- markets and market preferences
- choice of varieties for production
- seasonal production
- intensive production practises
  - mechanical and hand labor
  - specialized equipment and skills
  - crop protection
- preparing and packaging products
- pricing and marketing

22. Marketing Systems

- direct sales
- local, provincial, national and international markets
- need for marketing systems
- marketing agencies: cooperatives, free markets, marketing boards and government
- quotas and subsidies
- assessing and regulating quality of products

23. Mushroom Farming
- characteristics and life cycle of mushrooms
  - natural occurrence
  - culture and growth
  - species control and safety
  - growth environments
  - production, packaging and marketing
24. Oilseed (Canola)
- plant varieties, characteristics
  - crop production
  - harvesting
  - processing, distribution and marketing of oil as food
  - non-food products and uses
25. Planning and Finances: the Business side of Farming
- simulated farming: case study
  - records: physical and financial resources
  - budgets
  - costs and usage of land
  - decision making
  - computer applications
26. Poultry
- types, genetics, breeding
  - production
  - products
  - health and care
  - economic aspects
  - related industries
27. Processing and Preserving
- spoilage and shelf life
  - refrigeration and freezing
  - sterilization and canning
  - drying
  - irradiation
  - chemical additives
  - preservation projects
  - past and future techniques
28. Research and Technologies
- species development
  - improvements in monitoring and measuring
  - improvements in environmental controls
  - mechanization
  - current areas of research
  - apprentice research project

- 29. Sheep and Goats
  - types, genetics, breeding
  - production
  - health and care
  - economic aspects
  - related industries
- 30. Sugar
  - sugar and energy
  - sugar beets
    - irrigation
    - production
    - processing
  - sugar cane
  - international production and marketing
- 31. Transportation
  - farm needs and products
  - fertilizers and chemicals
  - livestock and feed
  - perishable foodstuffs
  - long and short distance transportation
  - economics of production and distance to markets
- 32. Trapping
  - history and development of fur industry
  - fur bearing animals
  - humane trapping
  - equipment
  - safety considerations
  - trapline preparation and management
  - preparing and processing furs
  - conservation and protection issues
- 33. Tree Farming
  - land suitability and location
  - conservation considerations
  - products and markets
  - varieties and growth characteristics
  - preparation, planting and care
- 34. Weather and Crop Management
  - frost and crop damage
  - effects of too much and too little moisture
  - hail and hail damage
  - weather modification
  - crop management practises
  - personal health and weather (rain, dust, heat and sunlight)

## RESOURCES

Recommended resources for the theme based units are currently under development. For a copy of pilot resources applicable to the year one program, contact Mrs. Betty Gabert, Education Specialist, Alberta Agriculture, 2nd Floor, J.G.O'Donoghue Building, 7000 – 113 Street, Edmonton, Alberta, T6H 5T6, (phone 427-2402). Materials for years two and three will not likely be available until the 1988-1989 school year.

A compilation of supplementary resources which may also be useful in teaching the program is provided on the pages which follow. Note that this listing is an initial working draft and that it represents only a preliminary search for resources. As such there are a number of optional topics for which no resources have yet been identified. Space is provided for users to write in bibliographic information on other resources that have been found useful.

The format of the listing provides for categorization of resources according to both the intended audience and the scope of the content. Resources that are primarily for teacher use are identified separately from those primarily intended for direct use by students; and those resources which include suggested activities are listed separately from those which contain information only.

In requesting resources from the identified suppliers the following information may be useful:

ALBERTA AGRICULTURE requires that all requests for materials be on school letterhead and normally provides only single copies, (several copies for some items on special request). Schools are asked to restrict their orders to 50 items each year. Requests for items should be forwarded to the following address:

Print Media Branch.  
Alberta Agriculture,  
7000 – 113 St.  
Edmonton, Alberta  
T6H 5T6

AGRICULTURE CANADA publications requests should be forwarded to:

Agriculture Canada  
Information Division  
Ottawa, Ontario  
K1A 0C7

UNITED STATE DEPARTMENT OF AGRICULTURE publications requests should be forwarded to:

Ag in the Classroom  
Room 227 – W  
United State Department of Agriculture  
Washington, D.C., U.S.A.  
20250

Audio-visual resources as well as additional print resources are identified in the draft publication Agriculture Resources Guide, (Alberta Agriculture, 1987). An advance copy of this publication will be forwarded to teachers who participate in the field test of the junior high agriculture program.

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY  |
| <p><u>Partners</u>, 1985,<br/>Classroom Agriculture Program<br/>Room 241 2116 - 27 Avenue N.E.<br/>Calgary, Alberta<br/>T2E 7A6 (291-4800)<br/>aimed at lower age</p> <p><u>Food and Energy</u> n.b. INTRODUCTION<br/>1986, Ontario Ministry of Agriculture and Food</p> | <p><u>Murphy, Wendy B.</u>, 1984, <u>The Future World of Agriculture</u>, Walt Disney Productions</p> <p><u>Silent Partner in Thousands of Alberta Businesses</u>, undated, Alberta Agriculture</p> <p><u>Careers in the Agriculture-Food System</u><br/>1985, Agriculture Canada</p> <p><u>A Tribute to the American Farmer</u><br/>1985, Cyanamid, Agricultural Division</p> <p><u>Nature of Things: Cheese</u><br/>1986, C.B.C.</p> |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Nutrition: the Ins and Outs, 1983,  
Alberta Agriculture

Alberta Cattle, for superior performance  
1986, Alberta Agriculture

Canadian Cheddar Cheese  
1977, Agriculture Canada

Instant Skim Milk in Cooking and Baking  
1978, Agriculture Canada

Yogurt  
1978, Agriculture Canada

TEACHER: ACTIVITIES INCLUDED

Alberta Dairy Production Course  
1986 (revision), Alberta Agriculture, Home  
Studies Program  
(\$30 for 10 lessons)

Making Dairy Products at Home  
1984, Agriculture Canada

TEACHER: REFERENCE ONLY

People on the Farm:  
USDA, 1980

Minerals and Vitamins for Dairy Cows  
1979, Agriculture Canada

Electric Power for Dairy Farming  
1971, Trans Alta Utilities

Food for Thought – a series of Quick Facts on  
Food and Nutrition  
1986, Ontario Ministry of Agriculture and Food

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|------------------------------|---|
| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY<br><br><u>FERTILE FIELDS AND FERTILIZERS</u> ,<br>Esso Chemical Canada Ltd., 1980<br><br><u>Anhydrous Ammonia</u> , Esso Chemicals Canada<br>Ltd., 1981<br><br><u>The Operation of a Grain Elevator</u><br>Alberta Pool, undated<br><br><u>Students Story of Wheat</u> , 1983, Alberta Wheat<br>Pool<br><br><u>Grain Varieties in Alberta</u> , 1981, Alberta Wheat<br>Pool |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><br><u>People on the Farm: Growing Wheat</u><br>USDA, 1986<br>very U.S. orientated<br><br><u>Safety Guide for Farming</u> ; 1987,<br>Alberta Agriculture   |

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| <p>STUDENT: ACTIVITIES INCLUDED</p> <p><u>Water and Agriculture</u> (Student)<br/>1987, Alberta Environment</p>       | <p>STUDENT: REFERENCE ONLY</p> |
| <p>TEACHER: ACTIVITIES INCLUDED</p> <p><u>Water and Agriculture</u> (Teacher Guide)<br/>1987, Alberta Environment</p> | <p>TEACHER: REFERENCE ONLY</p> |

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| STUDENT: ACTIVITIES INCLUDED  | STUDENT: REFERENCE ONLY  |
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| <p><u>Canada is Cattle Country</u>, 1984<br/>Beef Information Centre<br/>238, 2116 - 27 Avenue N.E.<br/>Calgary, Alberta<br/>T2E 7A6 (403) 277-2396</p> <p><u>Pasture to Plate</u>, 1984<br/>Alberta Cattle Commission<br/>241, 2116 - 27 Avenue, N.E.<br/>Calgary, Alberta<br/>T2E 7A6 291-4800<br/>aimed at the very young</p> <p><u>Food and Energy</u><br/>1986, Ontario Ministry of Agriculture and Food<br/>n.b. section 2 – The Constituents of Food</p> | <p><u>Nutrition Guide: Lookin' good, feelin' good with beef</u><br/>Beef Information Centre (since 1985)<br/>address at left</p> <p><u>Beef Nutrition Posters</u> (set of four)<br/>Beef Information Centre</p> <p><u>Protein Machines: Converting Roughage to Human Food</u>, undated, University of Guelph</p> |
|   | <p><i>continued on next page</i></p>   |

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY<br><i>continued</i><br><br><u>Nutrition: the Ins and Outs</u> , 1983, Alberta Agriculture<br><br><u>Alberta Cattle, for superior performance</u><br>1986, Alberta Agriculture<br><br><u>Butcher's Tour of Alberta Pork</u> , 1975, Canadian Pork Council<br><br><u>Food for Thought – a series of quick facts on food and nutrition</u> , 1986, Ontario Ministry of Agriculture and Food<br><br><u>Food</u> , March, 1986, in <u>Newscience</u><br>Ontario Science Centre |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><i>continued</i><br><br><u>Nutrient Value of Some Common Foods</u><br>1979, Health and Welfare Canada<br><br><u>Pork</u><br>1975, Canada Pork Council, Ottawa  |

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY   |
| <p><u>Food and Energy</u><br/>1986, Ontario Ministry Of Agriculture and Food<br/>n.b. section 3, Food Production</p> | <p><u>The Wizard of Waste: Converting Waste Heat to Food</u>, undated, The University of Guelph</p> <p><u>Gardening on the Prairies</u>: Roger Vick, Western Producer Prairie Books, 1987</p> |

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| STUDENT: ACTIVITIES INCLUDED  | STUDENT: REFERENCE ONLY |
| <p><u>A Mini Unit on Soil</u><br/>1986, J. Christopher and R. Borelli<br/>Ontario Ministry of Agriculture and Food</p> <p><u>Studying Soil</u><br/>1976, W. MacKillican McGraw-Hill Ryerson</p> |                         |

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| STUDENT: ACTIVITIES INCLUDED                                 | STUDENT: REFERENCE ONLY  |
| Food and Energy<br>1986, Ontario Ministry of Energy and Food | Farm Energy Management in Alberta<br>1982, Alberta Agriculture |
| n.b. section 3<br>ENERGY AND FOOD                            | TEACHER: ACTIVITIES INCLUDED                                   |

Simple Farm Energy Audit  
1982, Alberta Agriculture

Alberta Forage Course  
198 , Alberta Agriculture, Home Study Materials  
(\$30 for 8 lessons)

People on the Farm: Growing Wheat  
USDA, 1980  
very U.S. in content

Alberta Forage Manual, 1981  
Alberta Agriculture

Hay and Forage Harvesting Methods  
1976, Alberta Agriculture

Saving Energy and Dollars on the Farm  
1985, Agriculture Canada

Conservation Farming  
1980 Deere and Company, Moline, Illinois  
may be available for John Deere Technical Services

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY |
| <p><u>Food and Energy</u><br/>1986, Ontario Ministry OF Agriculture and Food</p> <p>n.b. section 3<br/>Food Production</p> |                         |

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| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY |

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY<br><br>Gumby, Lise, 1983, <u>Early Farm Life</u> , Crabtree Publishing Company, Toronto                                       |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><br>Men, Machines and Land Farm and Industrial Equipment Institute<br>410 North Michigan Avenue<br>Chicago, Illinois 60611 |

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| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY |

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| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY |

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY   |
|                              | <p><u>Rabies and Livestock</u><br/>1968 Agriculture Canada</p> <p><u>Rabies and Your Pet</u><br/>1977, Agriculture Canada</p> <p><u>Raising Rabbits</u><br/>1982, Agriculture Canada</p> <p><u>Guinea Pigs</u><br/>1974, Agriculture Canada</p> |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

Beehive Construction  
1976, Agriculture Canada

Build Your Own Pollen Trap  
1985, Alberta Agriculture

The Prairie Beekeeping Manual  
1986, Alberta Agriculture

STUDENT: ACTIVITIES INCLUDED

Canada is Cattle Country, 1984  
Beef Information Centre  
238, 2116 - 27 Avenue N.E.  
Calgary, Alberta  
T2E 7A6 (403) 277-2396

Pasture to Plate, 1984  
Alberta Cattle Commission  
241, 2116 - 27 Avenue N.E.  
Calgary, Alberta  
T2E 7A6 (403) 291-4800  
aimed at the very young

STUDENT: REFERENCE ONLY

Nutrition Guide: lookin' good feelin' good with beef  
Beef Information Centre  
(address as at left)

BEEF NUTRITION POSTERS (set of 4)  
Beef Information Centre

Protein Machines: Converting Roughage to Human Food, undated, University of Guelph

Alberta Cattle for Superior Performance  
1986, Alberta Agriculture

Answers About Beef – Our Renewable Resource  
undated (very new), Alberta Cattle Commission

Know More About Cattle  
undated, Beef Information Centre

TEACHER: ACTIVITIES INCLUDED

Beef Builds Better Bodies  
Beef Information Centre  
(address as above)  
includes reproducible material

Alberta Cattle Nutrition Course  
Alberta Agriculture, Home Study Program  
(\$30 for 8 lessons)

TEACHER: REFERENCE ONLY

People on the Farm: Raising Beef Cattle  
USDA, 1980  
U.S. content

Irrigated Pastures for Cattle in Western Canada,  
1974, Agriculture Canada

Grazing Systems for Alberta Ranges  
Alberta Agriculture, 1979

Brands and Branding, 1978  
Alberta Agriculture

Feedlot Finishing of Cattle  
1981, Agriculture Canada

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY |
| TEACHER: ACTIVITIES INCLUDED<br><br><u>Alberta Farm Computer Course</u><br>19 , Alberta Agriculture, Home Studies<br>Program<br>(\$25 for 8 lessons) | TEACHER: REFERENCE ONLY |

STUDENT: ACTIVITIES INCLUDED

Pest Control in Canada

1984 Alberta Agriculture

Originally written for senior high

STUDENT: REFERENCE ONLY

Weed Seedling Identification

1986, Manitoba Agriculture and Alberta

Agriculture

Gardening on the Prairies

Roger Vick, Western Producer

Prairie Books, 1987

TEACHER: ACTIVITIES INCLUDED

Alberta Weeds Course

19 , Alberta Agriculture, Home Studies

Program

(\$30 for 8 lessons)

Crop Protection Course

19 , Alberta Agriculture, Home Studies

Program

(\$30 for 8 lessons)

TEACHER: REFERENCE ONLY

Microbial Insecticides in Canada: Their Registration and Use in Agriculture, Forestry and Public and Animal Health; Entomological Society of Canada, 1986  
(Very Technical)

Spoilage of Farm Stored Grain by Molds, Insects and Mites in Western Canada, 1971  
Agriculture Canada

Pesticides for Home and Garden  
1984, Agriculture Canada

Pesticides, Their Implications for Agriculture  
1973, Agriculture Canada

Controlling Brush in Alberta  
undated, Alberta Agriculture

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY<br><br><u>Wildlife Habitat: a handbook for Canada's prairies and parklands</u><br>1981, Environment Canada   |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><br><u>Managing Problem Wildlife in Alberta</u><br>undated, Alberta Agriculture and ENR<br><br><u>Prevention of Road Floodings Caused by Beaver</u><br>undated, Alberta Fish and Wildlife |

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|---|---|
| STUDENT: ACTIVITIES INCLUDED  | STUDENT: REFERENCE ONLY   |
| TEACHER: ACTIVITIES INCLUDED<br><br><u>Alberta Forage Course</u> (Home Studies Program)<br>8 booklets – complete coverage, high reading<br>level<br>(cost \$30) | TEACHER: REFERENCE ONLY<br><br><u>Irrigated Pastures for Cattle in Western Canada</u><br>1974, Agriculture Canada |

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| STUDENT: ACTIVITIES INCLUDED  | STUDENT: REFERENCE ONLY  |
| Fruit Growing Industry in Canada, Brian Smith<br>Vanwell Publishing, 1986 | <u>Gardening on the Prairies,</u><br>Roger Vick, Western Producer<br>Prairie Books, 1987   |
| TEACHER: ACTIVITIES INCLUDED  | TEACHER: REFERENCE ONLY<br><u>Alberta Saskatoons</u><br>1984, Alberta Agriculture<br><u>University of Alberta Home Gardening Course,</u><br>T. Shaw (ed.), University of Alberta, 1986 |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Mink Management and Nutrition  
1975, Agriculture Canada

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

Alberta Pork Production Course  
Alberta Agriculture, Home Studies Program  
(\$30 for 7 lessons)

Pork - the Nutrition Connection  
undated, Ontario Pork Producers' Marketing  
Board

TEACHER: REFERENCE ONLY

People on the Farm: Corn and Hog Farming  
USDA, 1980  
very U.S. in content

African Swine Fever  
1979, Agriculture Canada

Recommended code of practice for care and  
handling of pigs  
1984, Agriculture Canada

Swine Housing Facilities  
1985, Alberta Agriculture

Pork  
1975, Canadian Pork Council,  
75 Albert Street  
Suite 1101  
Ottawa, Ontario  
K1P 1E7

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Gardening on the Prairies  
Roger Vick, Western Producer  
Prairie Books, 1987

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

University of Alberta Home Gardening Course  
T. Shaw (Ed)  
University of Alberta, 1986

Home Vegetable Growing  
1959, Agriculture Canada

Growing Garden Potatoes  
1980, Agriculture Canada

Composting  
1979, Agriculture Canada

Home Vegetable Gardening in Alberta  
1983, Alberta Agriculture

Alberta Vegetable Production Guide 1987-88  
1987, Alberta Agriculture

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY   |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><br><u>The Horse, an Alberta Heritage</u><br>undated, Alberta Agriculture<br><br><u>Horse Management: Health</u><br>1986, Alberta Agriculture<br><br><u>Horse Management: Feeding</u><br>1986, Alberta Agriculture<br><br><u>Horse Management: Reproduction</u><br>1986, Alberta Agriculture |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Gardening on the Prairies  
Roger Vick, Western Producer  
Prairie Books, 1987

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

University of Alberta Home Gardening Course,  
T. Shaw (Ed)  
University of Alberta, 1986

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Irrigation in Alberta  
1985, Alberta Agriculture

TEACHER: ACTIVITIES INCLUDED

Alberta Irrigation Management Course  
Alberta Agriculture, Home Study Program  
(\$30 - lessons)

TEACHER: REFERENCE ONLY

Irrigation on the Prairies  
1975, Agriculture Canada

Scheduling Irrigation to Meet Crop Demands  
1976, Agriculture Canada

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Gardening on the Prairie  
Roger Vick, Western Producer  
Prairie Books, 1987

Your Shelterbelt Trees  
undated, Alberta Agriculture

Planting Farm, Field and Roadside Shelterbelts in Alberta  
undated, Alberta Agriculture

Planting Trees and Shrubs  
1980, Agriculture Canada

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

University of Alberta Home Gardening Course  
T. Shaw (Ed)  
University of Alberta, 1986

Alberta Horticultural Guide  
1986, Alberta Agriculture

Landscaping Alberta Yards  
1985, Alberta Agriculture

Pruning in Alberta  
1987, Alberta Agriculture

Chemical Weed Control in Shelterbelts  
1978, Agriculture Canada

Snow and Wind Control for Farmstead and Feedlot  
1978, Agriculture Canada

Transplanting Alberta Trees and Shrubs  
1985, Alberta Agriculture

Shelterbelt Planting and Farmstead Beautification  
1983, Alberta Agriculture

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

Alberta's Food Products  
1985, Alberta Agriculture

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY |
| TEACHER: ACTIVITIES INCLUDED<br><br><u>Grain and Oilseed Marketing Manuals –</u><br>(Booklets 1-6)<br>1984, Alberta Agriculture<br><br><u>To Market, to Market</u><br>undated, Ontario Ministry of Agriculture and Food<br>teacher's guide for using a videotape made for<br>Junior High viewing | TEACHER: REFERENCE ONLY |

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| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY  |
| TEACHER: ACTIVITIES INCLUDED | <p>TEACHER: REFERENCE ONLY</p> <p><u>Canola: Alberta's leading vegetable oil</u><br/>Alberta Agriculture<br/>limited nutritional and processing information included; mainly recipes</p> <p><u>Irrigated Canola Production</u><br/>1986, Alberta Agriculture</p> <p><u>Canola Meal in Poultry, Swine and Ruminant Rations</u><br/>1982, Alberta Agriculture</p> <p><u>Canola Production in Alberta</u><br/>1985, Alberta Agriculture</p> |

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| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY |
| <p><u>Cope . . . with a spending plan</u><br/>1983, Alberta Agriculture</p> <p><u>Cope . . . with family financial records</u><br/>1986, Alberta Agriculture</p> <p><u>Cope . . . with a household inventory</u><br/>1980, Alberta Agriculture</p> <p><u>Cope . . . with family and financial papers</u><br/>1983, Alberta Agriculture</p> |                         |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

Managing a Small Duck Flock  
1977, Agriculture Canada

Raising Geese  
1980, Agriculture Canada

TEACHER: ACTIVITIES INCLUDED

Get Cracking with Eggs (Teacher's Guide 1985)  
Alberta Egg Marketing Board  
15, 1915 - 32 Avenue N.E.  
Calgary, Alberta  
T2E 7C8  
(\$10.00/binder)

TEACHER: REFERENCE ONLY

People on the Farm: Broiler Growers  
USDA, 1980  
very U.S. in content

Poultry Production in Alberta  
1978, Alberta Agriculture

Broiler Raising  
1978, Alberta Agriculture

Poultry Housing Facilities  
1987, Alberta Agriculture

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|--|---|
| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY   |
| <p><u>Food and Energy</u><br/>1986, Ontario Ministry of Agriculture and Food<br/>n.b. Section 4, Food Processing</p> | <p><u>Home Curing</u><br/>1978, Alberta Agriculture</p> <p><u>Smoking Foods at Home</u><br/>1982, Alberta Agriculture</p> |

|  |   |
|--|---|
| STUDENT: ACTIVITIES INCLUDED   | STUDENT: REFERENCE ONLY <p>Murphy, Wendy B. 1984, <u>The Future World of Agriculture</u>, Walt Disney Productions</p> <p><u>Research Report</u>, Alberta Agriculture Research Division – published monthly, newsletter reviewing agriculture research</p>   |
| TEACHER: ACTIVITIES INCLUDED <p><u>Visions of the Future</u><br/>undated, Ontario Ministry of Agriculture and Food</p> | TEACHER: REFERENCE ONLY <p><u>Research Report</u> – Alberta Agriculture, Research Division, a monthly review of ongoing agriculture research in Alberta and the rest of Canada; several topics covered each issue. (Some technical reports are available on request)</p> <p>Various final reports from research funded by Alberta Agriculture Research Division are available in the Agriculture Library.</p> |

|                              |   |
|------------------------------|---|
| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY<br><br><u>Protein Machines: Converting Roughage to Human Food</u> , undated, U of Guelph<br><br><u>Alberta Sheep</u><br>1985, Alberta Agriculture |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><br><u>Artificial Rearing of Young Lambs</u><br>9182, Alberta Agriculture<br><br><u>Wool and Sheepskins</u><br>1978, Alberta Agriculture       |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

The Story of Sugar, undated,  
Canadian Sugar Institute  
141 Adelaide Street West  
Suite 1101  
Toronto, Ontario M5H 3L5

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

The Canadian Sugar Industry, a basic study,  
1981, Canadian Sugar Institute, address above

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

Traffic Laws for Farm Vehicles and Implements  
1986, Alberta Agriculture

|                              |   |
|------------------------------|---|
| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY   |
| TEACHER: ACTIVITIES INCLUDED | TEACHER: REFERENCE ONLY<br><p><u>Trapping and Conservation Manual</u>, 1986<br/>AVC Lac La Bich/Alberta Advanced<br/>Education/Alberta Forestry Lands and Wildlife<br/>Individual teacher copies may be requested<br/>from Mr. F. Neuman<br/>Trapper Services Coordinator<br/>Fish and Wildlife Division<br/>First Floor North Tower<br/>9945 – 108 Street<br/>Edmonton, Alberta<br/>T5K 2G6<br/>(phone 427-6750)</p> |

STUDENT: ACTIVITIES INCLUDED

STUDENT: REFERENCE ONLY

TEACHER: ACTIVITIES INCLUDED

TEACHER: REFERENCE ONLY

Transplanting Alberta Shrubs and Trees  
1985, Alberta Agriculture

Propagation and Production of Woody  
Ornamentals in a Small Nursery  
1980, Alberta Agriculture

|                              |  |
|------------------------------|--|
| STUDENT: ACTIVITIES INCLUDED | STUDENT: REFERENCE ONLY  |
| TEACHER: ACTIVITIES INCLUDED | <p>TEACHER: REFERENCE ONLY</p> <p><u>Effects of Hail and Drought on Major Crops in Alberta,</u><br/>1986, Alberta Agriculture</p> <p><u>Growing Degree-Days and Crop Production in Canada</u><br/>1977, Agriculture Canada</p> <p><u>Snow and Wind Control for Farmstead and Feedlot</u><br/>1978, Agriculture Canada</p> <p><u>Potential for Weather Modification in Alberta</u><br/>1986, Alberta Agriculture</p> <p><u>Weather modification in Alberta, Research and Operations 1980-1985, Summary report and recommendations</u><br/>1986, Alberta Agriculture</p> <p><u>University of Alberta Home Gardening Course,</u><br/>T. Shaw (Ed) University of Alberta, 1986</p> |

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JUNIOR HIGH AGRICULTURE/LAND AND  
LIFE PROGRAM CURRICULUM GUIDE --  
/FIELD TEST DRAFT --  
39954558 Curr Hist



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CAMPUS X SP-0 M.B.

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